Term Information

Effective Term
Autumn 2014

Previous Value
Summer 2013

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)
Change prerequisite "PhysioCB 3101 and 3102" to "PhysioCB 3101 and 3102 or PhysioCB 3200"

What is the rationale for the proposed change(s)?
The Dept of Physiology and Cell Biology created PhysioCB 3200 as a a one-semester version of the 3101/3102 sequence.

What are the programmatic implications of the proposed change(s)?
(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?
None

Is approval of the request contingent upon the approval of other course or curricular program request? No

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area
Kinesiology: Health&Exercs Sci

Fiscal Unit/Academic Org
Human Development & Family Sci - D1251

College/Academic Group
Education & Human Ecology

Level/Career
Undergraduate

Course Number/Catalog
3414

Course Title
Applied Exercise Physiology

Transcript Abbreviation
Applied Ex Phys

Course Description
Examines the primary human physiological systems and their response to acute and chronic exercise stimuli.

Semester Credit Hours/Units
Fixed: 4

Offering Information

Length Of Course
14 Week

Flexibly Scheduled Course
Never

Does any section of this course have a distance education component? No

Grading Basis
Letter Grade

Repeatable
No

Course Components
Laboratory, Lecture

Grade Roster Component
Lecture

Credit Available by Exam
No

Admission Condition Course
No

Off Campus
Never

Campus of Offering
Columbus

Prerequisites and Exclusions
Prerequisites/Corequisites

Prereq: Physio 3101 and 3102 or 3200, or permission of instructor.

Exclusions

Not open to students with credit for EduPAES 414 or 514.

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 31.0505
Subsidy Level Baccalaureate Course
Intended Rank Junior, Senior

Requirement/Elective Designation

Required for this unit's degrees, majors, and/or minors

Course Details

Course goals or learning objectives/outcomes

• Describe primary human physiological systems and their response to acute and chronic exercise stimuli

Previous Value

• How carbohydrates and lipids are metabolized in the human body;
• The influence of endurance training upon carbohydrate and lipid metabolism;
• Training strategies to optimize aerobic and anaerobic power development;
• Gas exchange in the human body
• The structure and function of the cardiovascular system and how it is influenced by aerobic
• Response of the skeletal muscle system to various resistance training protocols;
• Response of the human body to ergogenic aids and their influence on human performance;
• Response of the human body to various environmental stressors;
• Role of the endocrine system in the regulation of metabolism and energy utilization;
• Role of exercise and physical activity as a remedy for obesity and diabetes;
• Influence of exercise and physical activity on the aging process.

Content Topic List

Attachments

• Devor KNHES 3414 Syllabus Autumn Semester 13.doc
(Syllabus. Owner: Buckworth, Janet)

Comments
# Workflow Information

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<thead>
<tr>
<th>Status</th>
<th>User(s)</th>
<th>Date/Time</th>
<th>Step</th>
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<td>Submitted for Approval</td>
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<td>Achterberg, Cheryl L, Warnick, Bryan R., Odum, Sarah A., Zircher, Andrew Paul</td>
<td>03/05/2014 03:52 PM</td>
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</table>
KNHES 3414 – Applied Exercise Physiology
Course Syllabus – Autumn Semester, 2013

Professor: Steven T. Devor, Ph.D., FACSM

Lecture Time: 10:20 a.m. - 11:15 a.m., Monday, Wednesday, and Friday
Lecture Location: Macquigg Laboratory, 0160

Dr. Devor Office Hours: PAES Building, room A50 - 688-8436 - devor.3@osu.edu
Monday and Wednesday, 9:00 a.m. - 10:00 a.m.
other times are available by appointment

Graduate Assistants: Jessica D. Dicke, B.A. - dicke.35@osu.edu
PAES Building, room A12
Richard A. LaFountain, B.S. – lafountain.9@osu.edu
PAES Building, room A12
Kevin E. Schill, B.S. - schill.9@osu.edu
PAES Building, room A12

Laboratory Location: All laboratory sections will be held in PAES Building, room A10.

Required Reading:


Prerequisites: PHYSCB 3101 and 3102: Human Physiology I and II

Course Description: This course will examine the primary human physiological systems and their response to acute and chronic exercise stimuli. Physiological topics that will be covered include: 1.) Carbohydrate metabolism; 2.) Lipid metabolism; 3.) Pulmonary physiology; and, 4.) Cardiovascular physiology. In addition, the response of the physiological systems to various environmental situations including heat, cold, altitude, and microgravity will be discussed. Exercise for special populations will also be considered.
Course Objectives: Following the completion of KNHES 3414, students should have the ability to describe (1–11), and correctly (12–22):

1. How carbohydrates and lipids are metabolized in the human body;
2. Nutritional strategies for optimal exercise performance;
3. The influence of endurance training upon carbohydrate and lipid metabolism;
4. Training strategies to optimize aerobic and anaerobic power development;
5. Gas exchange in the human body;
6. The structure and function of the cardiovascular system and how it is influenced by aerobic exercise training;
7. The response of the skeletal muscle system to various resistance training protocols;
8. The response of the human body to various environmental stressors;
9. The role of the endocrine system in the regulation of metabolism and energy utilization;
10. The role of exercise and physical activity as a remedy for obesity and diabetes;
11. The influence of exercise and physical activity on the aging process.
12. Perform resting and exercise blood pressures;
13. Perform a sub-maximal lab and field aerobic exercise tests;
14. Perform a VO₂ max test, anaerobic threshold test, and a lactate threshold test;
15. Perform and interpret assessments from an isokinetic dynamometer;
16. Review the germane literature for a chosen research question;
17. Develop a research purpose and testable hypothesis;
18. Collect research data;
19. Analyze research data with basic statistics;
20. Interpret the results of a research project in the context of a purpose and testable hypothesis;
21. Write a research manuscript; and,
22. Present research results and conclusions utilizing a Power Point oral presentation.

Grading - Overall: The overall course grade for KNHES 3414 will be based 70% on the lecture component and 30% on the laboratory component. There will be no “curve” applied to any course grade, and there will be no extra credit points permitted.

Grading - Lecture: Grading of the lecture component of the course will be determined by four (4) hourly examinations and one (1) comprehensive final examination.

Examination #1: 12% of total course grade. This examination will cover material from August 23, 2013 through September 11, 2013.
Examination #2: 12% of total course grade. This examination will cover material from September 16, 2013 through October 2, 2013.
Examination #3: 15% of total course grade. This examination will cover material from August 23, 2013 through October 18, 2013.
Examination #4: 12% of total course grade. This examination will cover material from October 23, 2013 through November 8, 2013.
Final Examination: 19% of total course grade. This examination will be comprehensive and cover material from August 23, 2013 through December 2, 2013.
Examination Format: All lecture examinations will be comprised of multiple-choice questions. The grade distribution will be: 90% - 100% = A; 80% - 89% = B; 70% - 79% = C; 60% - 69% = D; and < 60% = E. Letter grades will be modified by the suffixes plus (+) and minus (-).

Lecture Topic and Reading Schedule:
Note that as we progress through the semester slight revisions may be made to the lecture schedule. If revisions are made, they will be announced at the beginning of the appropriate lecture.

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<th>Date</th>
<th>Day</th>
<th>Lecture Topic</th>
<th>Reading Assignment</th>
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<tr>
<td>1</td>
<td>8/21/13</td>
<td>Wednesday</td>
<td>Housekeeping and Introduction of Course</td>
<td>Chapter 1</td>
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<td>8/23/13</td>
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<td>Carbohydrate, Lipids, and Protein Structure</td>
<td>Chapter 1</td>
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<td>2</td>
<td>8/26/13</td>
<td>Monday</td>
<td>Carbohydrate, Lipids, and Protein Structure</td>
<td>Chapter 1</td>
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<td></td>
<td>8/28/13</td>
<td>Wednesday</td>
<td>Nutrition for Exercise</td>
<td>Chapter 3</td>
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<td>Friday</td>
<td>Nutrition for Exercise</td>
<td>Chapter 3</td>
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<td>3</td>
<td>9/2/13</td>
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<td>Labor Day Holiday – No Classes</td>
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<td>9/4/13</td>
<td>Wednesday</td>
<td>Biochemical Processes</td>
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<td>9/6/13</td>
<td>Friday</td>
<td>Carbohydrate Metabolism</td>
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<td>Monday</td>
<td>Carbohydrate Metabolism</td>
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<td>9/11/13</td>
<td>Wednesday</td>
<td>Fat Metabolism</td>
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<td>9/13/13</td>
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<td>5</td>
<td>9/16/13</td>
<td>Monday</td>
<td>Performance Testing Methods</td>
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<td>9/18/13</td>
<td>Wednesday</td>
<td>Performance Testing Methods</td>
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<td>9/20/13</td>
<td>Friday</td>
<td>Training Principles and Metabolic Adaptations to Training</td>
<td>Chapter 21, pp 452-460</td>
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<td>9/23/13</td>
<td>Monday</td>
<td>Pulmonary Structure and Function</td>
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<td>Day</td>
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<td>Reading Assignment</td>
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<td>Gas Exchange</td>
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<td>Respiration Control</td>
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<td>Cardiovascular Anatomy</td>
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<td>Cardiovascular Function During Exercise</td>
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<td>Components of Oxygen Consumption at Rest and Exercise</td>
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<td>Components of Oxygen Consumption at Rest and Exercise</td>
<td>Chapter 17</td>
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<td>Components of Oxygen Consumption at Rest and Exercise</td>
<td>Chapter 17</td>
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<td>Components of Oxygen Consumption at Rest and Exercise</td>
<td>Chapter 17</td>
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<td>10/16/13</td>
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<td>Excess Post Exercise Oxygen Consumption</td>
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<td>Excess Post Exercise Oxygen Consumption</td>
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<td>10/23/13</td>
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<td>Physiological Responses to Altitude</td>
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<td>Countermeasures for the Adaptations to Spaceflight</td>
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<td>Exercise in the Heat</td>
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<td>Wednesday</td>
<td>Hormonal Regulation</td>
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<td>Chapter 20</td>
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<td>11/15/13</td>
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<td>Energy Expenditure at Rest and Exercise</td>
<td>Chapter 9</td>
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<td>11/18/13</td>
<td>Monday</td>
<td>Energy Expenditure at Rest and Exercise</td>
<td>Chapter 9</td>
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<td>11/20/13</td>
<td>Wednesday</td>
<td>Exercise as a Remedy for Obesity and Diabetes</td>
<td>Chapter 30</td>
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<td>Friday</td>
<td>Exercise as a Remedy for Obesity and Diabetes</td>
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<td>Exercise and the Aging Process</td>
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<td>Exercise and the Aging Process</td>
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<td>12/5/13</td>
<td>Thursday</td>
<td><strong>Final Comprehensive Examination</strong></td>
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**Grading – Laboratory:** Grading of laboratory component of KNHES 3414 will be determined by seven (7) lab reports, two (2) Power Point presentations, and one (1) research manuscript.

**Laboratory Reports:** Seven (7) total, each worth 2%, for a total of 14% of the overall total course grade.

**Laboratory Power Point Presentations:** Two (2) total, each worth 4%, for a total of 8% of the overall total course grade.

**Laboratory Research Manuscript:** Worth 8% of the overall total course grade.
Laboratory Description:  

A: To expose the student to laboratory and field testing methods designed for the assessment of human fitness and performance. Labs include assessment of: 1.) Resting and exercise blood pressure; 2.) Isokinetic and dynamic strength; 3.) Predicted and measured VO2max; 4.) Anaerobic threshold and blood lactate; 5.) Anaerobic power; and, 6.) Selected field tests of aerobic capacity.

B: To expose the student to the many processes involved in conducting a research project, the writing of a research manuscript, and presentation of research results. The research manuscript will include the following sections: 1.) Abstract; 2.) Introduction; 3.) Statement of testable hypothesis; 4.) Experimental design and methods; 5.) Data analysis; and, 6.) Results discussion.

Research Manuscript:  
Each written manuscript for a lab group must include the following sections: 1.) Abstract (300 word limit); 2.) Introduction, purpose of the experiment, and statement of testable hypothesis (~2 - 3 pages); 3.) Materials and experimental methods including an experimental timeline (~3 pages); 4.) Statistical analysis (~1 paragraph); 5.) Results including necessary figures and tables (~3 - 4 pages); and, 6.) Discussion of the results relative to the hypothesis and similar experiments previously reported in the literature (~4 pages).

Oral Laboratory Manuscript Presentation:  
During week 5 (research study proposal) and week 13 (final research manuscript), each research team will present their project using Power Point software. The proposal presentation should take no more than 15 minutes and contain a title, introduction, purpose and hypothesis, background, methodology, and expected results. The final presentation must include all components of the written manuscript and last no longer than 30 minutes total, with 10 minutes of the 30 reserved for questions and discussion.

Laboratory Notebook:  
Each group must keep a laboratory notebook. All information (especially e-mails) exchanged amongst the group must be included in the notebook. Additional entries must include the progress of your group toward the completion of your research project, a detailed list of individual contributions, and a record of problems that occur during the semester relative to the project and their subsequent resolution.

Laboratory Expectation:  
The 3414 lab requires full participation by all students enrolled. Students are required to wear and bring appropriate clothing and footwear for exercise activities, including but not limited to cycling, treadmill and track running, stepping, and weight lifting. In addition, students are expected to treat all laboratory equipment with high respect and clean and return equipment to its original storage area as directed by the lab instructor.

Laboratory Attendance:  
Attendance is mandatory. KNHES 3414 labs are a team effort. Each unexcused absence from your weekly lab will result in a 5% reduction of your overall total course grade.
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Laboratory Activity and Assignment Due Dates</th>
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<tbody>
<tr>
<td>1</td>
<td>8/26/13 – 8/30/13</td>
<td>Orientation, how to complete a research literature search, research literature search assignment</td>
</tr>
</tbody>
</table>
| 2    | 9/2/13 – 9/6/13  | Research project:  Article presentation and group assignment  
|      |                 | **Article summary due**                                                                 |
| 3    | 9/9/13 – 9/13/13 | Lab 1: Resting and exercise blood pressure, and how to design a Power Point presentation |
| 4    | 9/16/13 – 9/20/13 | Lab 2: Sub-maximal exercise testing  
|      |                 | **Lab 1 report due**                                                                   |
| 5    | 9/23/13 – 9/27/13 | Research project: Study proposal  
|      |                 | **Lab 2 report due, and Power Point presentation of study proposal**                     |
| 6    | 9/30/13 – 10/4/13 | Lab 3: Maximal versus sub-maximal graded exercise testing                                |
| 7    | 10/7/13 – 10/11/13 | Lab 4: Field assessment  
|      |                 | **Lab 3 report due, and introduction section and methods section of research manuscript due** |
| 8    | 10/14/13 – 10/18/13 | Research project: Data analysis  
|      |                 | **Lab 4 report due**                                                                   |
| 9    | 10/21/13 – 10/25/13 | Lab 5: VO2max and lactate threshold recovery  
|      |                 | **Results section of research manuscript due**                                          |
| 10   | 10/28/13 – 11/1/13 | Lab 6: Isokinetic dynamometer  
|      |                 | **Lab 5 report due**                                                                   |
|      |                 | **Lab 6 report due, and discussion section and conclusion section of research manuscript due** |
| 12   | 11/11/13 – 11/15/13 | No laboratory scheduled                                                               |
| 13   | 11/18/13 – 11/22/13 | Lab 7 report due, final research manuscript  
|      |                 | **Power Point presentation, and final research manuscript due**                        |
| 14   | 11/25/13 – 11/29/13 | Thanksgiving Holiday - No laboratory scheduled                                         |
**Academic Misconduct** – The *Code of Student Conduct* (Section 3335-23-04) at The Ohio State University defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the *Code of Student Conduct* is never considered an “excuse” for academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct (COAM). If the COAM determines that you have violated the OSU Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. For additional information, see the Code of Student Conduct ([http://studentaffairs.osu.edu/info_for_students/csc.asp](http://studentaffairs.osu.edu/info_for_students/csc.asp)).

**ODS Statement** – Any student who feels s/he may need an accommodation based on the impact of a disability should contact one of the instructors privately to discuss specific needs. The Office of Disability Services (ODS) is relied upon for assistance in verifying the need for accommodations and developing accommodation strategies. Please contact the Office for Disability Services at 614-292-3307 (V) or 614-292-0901 (TDD) in room 150 Pomerene Hall to coordinate reasonable accommodations; [http://www.ods.ohio-state.edu/](http://www.ods.ohio-state.edu/). Students utilizing the ODS will be expected to follow Americans with Disabilities Act Guidelines for access to technology.

**Grievances and Solving Problems** - According to University Policies, available from the Division of Student Affairs, if you have a problem with this course, you should seek to resolve a grievance concerning a grade or academic practice by *speaking first with the instructor or professor*. Then, if necessary, with the Chairperson of the Department of Human Sciences, the Dean of the College of Education and Human Ecology, and the University Provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23, which is available from the Office of Student Life, 208 Ohio Union. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the Chairperson of the Department of Human Sciences.

**Statement on Diversity** – The College of Education and Human Ecology affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status is prohibited.